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McGinn, Noel; Snodgrass, Donald

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A TYPOLOGY OF IMPLICATIONS OF PLANNING EDUCATION FOR ECONOMIC DEVELOPMENT

Noel McGinn
Donald Snodgrass

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HARVARD INSTITUTE FOR INTERNATIONAL DEVELOPMENT
Harvard University
1737 Cambridge Street,
Cambridge, Massachusetts
02138, U.S.A.

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SUMMARY

The paper makes a start at developing a more sophisticated way of relating educational planning to development strategies. Six different development strategy types are defined, based on the sectoral emphasis (raw materials extraction; agricultural and intermediate processing; important substitution) and the relative priorities accorded to production and distribution. Liberia, Venezuela, South Korea, Cuba, Brazil and Tanzania are briefly discussed as real-world approximations of the six types of development strategy. Some implications of the strategies for the design of congruent educational systems are outlined.

CONTENTS

A Typology of Implications of Planning Education for Economic Development

1.0 Introduction

The need for educational planning can be linked to the failure of the market mechanism to provide a smooth fit between the outputs of the educational system and the demands of the economy. If the market worked perfectly to balance the demands and supplies of different kinds of graduates, there would be no need for planning. In fact, however, endemic surpluses of educated labor occur whenever economically attractive forms of education are subsidized from public funds, while both surpluses and deficits appear chronically as a result of faulty information flows regarding job availabilities and incomes. Planning is intended to make up for such limitations of the market mechanism.[1]

Given a problem of a disjunction between what society provides and what the educational system needs, or what education produces and the society needs, the planner has two major alternatives:

1) Take the attributes of other sectors of the society as fixed, and adjust the input requirements and/or output characteristics of the education so as to achieve equilibrium;

2) Design the education system so that its outputs will generate changes in the other sectors of the society that eliminate disjunction by achieving equilibrium.

The first alternative is considerably easier and characterizes most planning. It is simpler to adjust the qualitative and quantitative characteristics of education to fit what is asked of it, than it is to design an educational system that results

[1] A general surplus of educated labor resulting from the subsidization (underpricing) of labor is not really a case of market failure, but rather an example of the market working all too well. Possible solutions include (1) planning to define a limit on the amount of subsidized education to be provided, or (2) elimination of the subsidy, perhaps accompanied by specific assistance to needy individuals.

in desired structural changes in society. This "reproductive" characteristic of education has been much commented upon recently.[2] The critical factor seems to be whether the political hegemony of the government has been well-established. In societies that have just experienced a revolutionary change of government (e.g., Tanzania, Cuba, China),education can be used as an instrument for disrupting traditional patterns of behavior. Significantly, there was no apparent central planning of education in those countries in the sense conveyed by the methods and concepts presented in this collection of papers.

Once the new government is firmly in control, education may play less of a leading role, and be planned to follow the requirements of other sectors. Most of the methodological work in this collection is designed to increase the planner's skills with respect to planning education relevant for one sector, the economy. Education for development is everywhere the planner's major interest, and development is most commonly defined in terms of economic growth (or more recently in terms of employment, redistribution of income or other economic outcomes). This is not to deny that education cannot be planned to meet demographic pressures, or what is called social demand. In fact this collection includes several papers on that issue. But any quick review of work in the field indicates clearly that economic variables are those which receive the most attention from planners.

As other papers in this collection note, there are two major techniques for analyzing the amount and ways in which education can contribute to economic growth. Both assume that education contributes to increments in the marginal productivity of individual workers, and that those increments are additive to benefit the total economy. Rate-of-return analysis, if used to guide educational policy, in effect adjusts the outputs of education to meet present (or recently past) economic needs. Manpower analysis attempts to anticipate future

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[2] For one example, see Samuel Bowles and Herbert Gintis, Schooling in Capitalist America, New York: Basic Books, 1976.

needs for workers, but the end point is a specification of the number and kinds of outputs that education should generate to be articulated with the economy. (The reader should note that both techniques are, in this collection as elsewhere, subject to much criticism).

Concern for adjusting education to meet characteristics of the economy has until recently meant attention only to the problem of increasing productivity and hence overall growth. In recent years the concerns of the educational planner have broadened, to include first the need to consider how to increase employability of the "products" of the educational system--its graduates--and, more recently, how to design educational programs to foster a more equitable distribution of income. The paucity of work in this area is seen in the review in this collection by Prysor-Jones[3] on questions of equality and equity in education.

Some would argue that the question of how education contributes to the distribution of wealth and income has been ignored because those who control education are also those who control wealth and income. These dominant groups have emphasized the contribution of education to growth because it is in their interest to do so. For years economic development theory emphasized growth, argued that education could contribute to growth, and held out the promise that with increased growth would come increased benefits to all.

We now know that such a happy outcome is not guaranteed. One can have high rates of growth without improved income distributions, as has been seen in countries such as Brazil, where high rates of sustained growth have been accompanied by a worsening in the relative (and in some cases absolute) income position of the poor majority. Nor is it the case that rapid expansion of education automatically leads to economic growth, as is seen in the case of

[3] Suzanne Prysor-Jones, "Education and Equality in Developing Countries," Paper #2, Harvard Graduate School of Education, Center for Studies in Education and Development.

the Philippines. Furthermore, some countries, like Mexico, have had high rates of growth of both education and economy,along with a worsening distribution of income.

The questions are whether increased productivity necessarily means increased inequity in society and, if it does not, what is the role of education to help insure that there is both growth and increased equity? We now have enough examples and analysis of capitalist countries (e.g., Taiwan, South Korea) that have had high rates of growth and improved (or at least not worsening) income distributions to know that it is possible to do both simultaneously.[4] We are beginning to learn something about the kinds of educational strategies that should (or appear to) accompany these patterns of equitable development.

This paper is an attempt to sensitize educational planners, who will be drawn to designing education to foster economic development, to the implications of following one or another strategy.

Both international donor agencies and a number of developing countries have expressed concern for improving the conditions of living of the "poor majority" or the "marginated masses" or the "lower 40%" of their populations. Given this concern, educational planners have to be aware of the possible contradictions between planning to meet economic growth requirements, and what education might do to contribute to a re-distribution of income and wealth.

This paper is intended as a brief exploration of those issues. It does so in the following manner. First, the paper reviews various types of economic development strategies, showing how education must be

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[4] See Hollis Chenery (ed.).

varied to meet requirements of different economies. The planner's task is complicated by the fact that in many developing countries the government does not have full control over the educational system, nor over the economy. The paper then reviews factors both internal and external to the country that make it difficult to plan education in accordance with broad strategies of economic development. The intent i not so much to discourage, as to increase the modesty of, the planner.

2.0 Types of Development Strategies

We do not find it easy to classify development strategies for the purpose of drawing out educational implications. Perhaps the two major complicating factors are: (1) the wide variation among countries in terms of initial conditions and (2) the fact that real world policy sets are almost always mixed, drawing elements from more than one strategic approach. To make the problem manageable, we must talk in terms of a few pure types of both initial conditions and development strategies, even though the real world is full of overlapping and in-between cases.

Initial conditions can vary in at least six important respects, each of which lends itself to some quantification:

1) Income (output) level of the economy (despite its many defects, GNP or GDP per head measures this best).

2) Economic structure (as a first approximation, one looks at the share of nonagricultural -- or, preferably, "modern" -- activities in total income and employment).

3) Income distribution (can be measured in many ways; the most commonly used single measure is the Gini concentration ratio).

4) Level of educational attainment (could be measured by the mean or median, years of schooling of the adult population; an improvement, if statistics permitted, would be to add nonformal education. Most useful would be a measure of achievement or learning).

5) Distribution of educational attainment (the degree of inequality in the distribution of years of schooling among the adult population computed in the same way income inequality is calculated).

6) Capacity for educational planning (includes availability of necessary statistics, background research and trained and experienced planners; these elements could be measured individually, although they could not easily be aggregated).

Table 1 makes a start at measuring these initial condition variables for 125 countries -- every country, in fact, with population over a million. In reading a table like this, one must be cognizant of two things: (1) the tendency for the movement of these variables to be systematically interrelated according to a "normal" pattern of development; (2) the fact that nevertheless, significant deviations from "normal" patterns exist in some cases.

The 125 countries are ranked in the table by ascending levels of GNP per head. We see that (1) the relative importance of primary production as a source of both income and jobs declines as income rises; (2) the inequality of income distribution (as measured by the Gini coefficient) first rises, then declines, as predicted by the "Kuznets hypothesis," (3) the level of educational attainment rises rapidly in the upper income income ranges. The distribution of educational attainment which we have not yet calculated, is expected

Table 1

Summary Table on Levels of Economic and Educational Development

Countries by Income Level Class	Income Level (1973 GNP/head in US) [5]	Economic Structure [6] Primary as % of Total (c. 1965); Value added	Employment	Income distribution [3] Gini ratio, c, 1965)	Education Level (median years of schooling 45+, last census)
Under $100 [5]					
Laos	60	..	..	..	..
Bhutan	60	..	..	..	..
Mali	70	.50	..	..	..
Upper Volta	70	..	..	..	..
Ruanda	70	..	..	..	..
Cambodia	70	.40	.80	..	..
Burundi	80	..	..	..	..
Burma	80	..	.11	.35	1
Bangladesh	80	..	..	.34	..
Chad	80	.53	..	.35	..
Somalia	80	..	..	..	..
Afghanistan	90	..	..	..	..
Ethiopia	90	.62	..	..	..
Nepal	90	..	..	..	1
Group mean (s.d.)	80 (10)	.51 (.09)	.46 (.49)	.35 (.01)	1 (0)
$101 - 200					
Lesotho	100	..	..	..	..
Yeman Arab Rep.	100	..	..	..	..
Niger	100	.61	.97	.34	..
Guinea	110	..	..	..	..
Viet-Nam Dem. Rep. of	110	..	..	..	..
Yemen.Dem Rep. of	110	..	..	..	..
Malawi	110	.58	..	.41	1
Benin, Peoples Rep. of	110	.43	..	.42	..
Pakistan	120	.48	.68	.37	1
Sri Lanka	120	.34	.49	.44	4
India	120	.49	.73	.33	1
Haiti	130	.51	..	..	1
Indonesia	130	.61	.67	.34	2
Tanzania	130	.57	..	.54	..
Sudan	130	.54	.87	.40	1
Zaire	140	.28	.88	..	1
Uganda	150	.56	..	.37	1
Malagasy Rep.	150	.29	..	..	..

Countries by Income Level Class	Income Level	Economic Structure (Value)	Economic Structure (Employment)	Income Distribution	Education Level
South Viet Nam	160	.31	..	..	..
Central Afr. Rep.	160	..	..	..	..
Sierra Leone	160	.51	.80	.56	..
Kenya	170	.35	..	.61	1
Togo	180	..	..	..	..
Mauritania	200	..	..	..	..
Group mean (s.d.)	130(27)	.47(.12)	.76(.15)	.44(.09)	1 (1)
$201 - 300					
Nigeria	210	.59	..	.51	..
Bolivia	230	.38	.53	..	1
Cameroon	250	..	..	..	..
Egypt	250	.30	.57	.41	..
Thailand	270	.41	.82	.51	3
China, Peoples Rep. of	270	..	..	..	..
Philippines	280	.33	.53	.48	4
Senegal	280	.32	..	.56	..
Ghana	300	..	.60	..	1
Group mean (s.d.)	260 (28)	.39(.11)	.61(.12)	.49(.06)	2(2)
$301-- 500					
Liberia	310	..	..	..	..
Honduras	320	.42	.67	.63	1
Morocco	320	.35	.58	.50	1
Congo Peoples Rep. of	340	..	..	..	..
Korea, Dem. Rep. of	340	..	..	..	..
Jordan	340	.24	.38	..	..
ElSalvador	350	.30	.60	.53	1
Mozambique	380	..	..	..	1
Ecuador	380	.36	.56	.38	..
Ivory Coast	380	.42	.87	.43	3
Korea, Rep. of	400	.43	.54	.26	..
Syria	400	.29	.56	..	6
Papua, New Guinea	410	.69	..	..	1
Paraguay	410	.37	.55	..	1
Rhodesia	430	.26	..	.66	3
Zambia	430	.48	.27	.48	1
Columbia	440	.34	.49	.62	1
Tunisia	460	.26	..	.53	2
Albania	460	..	..	..	..

Level Class		Economic Structure Value	Economic Structure Employment	Income Distribution	Education Level
Angola	490	.23	..	..	..
Guatemala	500	.29	.66	..	1
Group mean (s.d.)	390 (56)	.36 (.12)	.56(.15)	.50 (.12)	2 (1)
$501 - 1,000					
Dominican Rep.	520	.27	.62	..	3
Nicaragua	540	.36	.60	..	1
Cuba	540	..	..	..	4
Mongolia	550	..	..	..	..
Algeria	570	.32	.63	..	1
Malaysia	570	.41	.55	.36	1
Turkey	600	.37	.72	.57	1
Peru	620	.26	.52	.61	2
China, Rep. of	660	.28	.52	.33	..
Costa Rica	710	.28	.49	.50	4
Chile	720	.21	.32	.44	6
Brazil	760	.23	.54	.54	2
Iraq	850	.54	.48	.60	1
Iran	870	.45	.47	..	1
Mexico	890	.15	.49	.53	4
Panama	920	.26	.46	.48	5
Lebanon	940	.12	..	.55	..
Uruguay	950	.15	.18	.43	5
Jamaica	990	.21	.27	.56	6
Group mean (s.d.)	720 (165)	.29(.11)	.50(.13)	.50(.09)	3(2)
1,001 - 2,000					
Yugoslavia	1010	.23	.59	.35	5
South Africa	1050	.22	.40	.58	2
Trinidad Tobago	1310	..	..	.44	5
Portugal	1410	.22	.43	..	2
Hong Kong	1430	.02	.05	.43	4
Bulgaria	1590	..	..	.21	6
Saudi Arabia	1610	.59	..	..	..
Venequela	1630	.35	.34	.54	1
Argentina	1640	.19	.18	.44	7
Spain	1710	.19	.34	.39	4
Singapore	1830	.05	..	..	..
Hungary	1850	..	..	.25	7
Greece	1870	.26	.48	.38	6
Group mean (s.d.)	1530 (280)	.23 (.16)	.35(.17)	.40(.11)	4(2)

egalitarian base (and that is almost all) must use education as a major vehicle of socialization of new generations into egalitarian values. Those who once had wealth and income must be educated to accept less. Those who have not had it must, except in cases where growth accompanies the distribution strategy, accept that they will never have it as the rich once had. Where the labor force is differentiated, education must put special emphasis on the importance of non-work-related values, such as citizenship.

4.2 Type of Education and Type of Economy

Differentiation of the labor force occurs as economies begin to develop an internal capacity for production beyond that of natural resources extraction. Enclave economies need people trained principally to deal with problems of possession: clerks and accountants and security personnel at low levels; lawyers, philosophers and others at the upper levels. The more developed the economy becomes, the greater will be the requirements for differentiation of the educational product and, consequently, the greater will tend to be

Countries by Income Level Class	Income Level	Economic Structure (Value)	Economic Structure (Employment)	Income Distribution	Education Level
$2,001 and above					
USSR	2030	..	..	...	8
Poland	2090	..	..	.26	7
Ireland	2150	..	.32	..	5
Pureto Rico	2180	.08	.17	.44	7
Italy	2450	.14	.26	.40	4
Czechoslovakia	2870	..	..	.19	10
German Dem. Rep	3000	..	..	.20	11
Israel	3010	.08	.13	.30	8
United Kingdom	3060	.06	.05	.38	10
Austria	3510	.09	.24	..	3
Lybian Arab Rep.	3530	.59	.39	..	1
Finland	3600	.19	.36	.46	4
Japan	3630	.11	.25	.39	6
New Zealand	3680	.16	.14	.31	..
Netherlands	4330	.10	.12	.42	4
Australia	4350	.14	.11	.30	8
France	4540	.09	.21	.50	4
Belgium	4560	.08	.09	..	..
Norway	4660	.10	.20	.35	5
Denmark	5210	.11	.18	.37	..
Germany, Fed. Rep. of	5320	.06	.13	.45	..
Canada	5450	.10	.10	.33	9
Sweden	5910	.08	.12	.39	8
Switzerland	6100	..	.11	..	5
United States	6200	.05	.07	.34	12
Group mean (s.d.)	3900(1310)	.13(.12)	.18(.09)	.36(.08)	7(3)
Overall mean (s.d.)	1170(1550)	.31(.17)	.43(.11)	.43(.11)	4(3)

..Means not available

Source Notes

5 World Bank Atlas (1975).

6 Hollis Chenery, et.al., Redistribution with Growth (Langdon: Oxford University Press for the World Bank and Institute of Development Studies, 1974).

7 Felix Pankert, "Income Distribution at Different Levels of Development: A Survey of Evidence" International Labour Review 108, nos. 2-3(August-September, 1973): 97-125; Shail, Jain, Size Distribution of Income, A Compilation of Data (World Bank, 1975).

8 UNESCO, Statistical Yearbook 1973 (Paris, 1974): 77-93.

to find themselves exporting expensive highlevel manpower, as witness the experience of a number of countries.[6] In general, countries with high ratios of foreign to domestic capital, or high dependence on foreign technologies, should begin by attempting to satisfy the demand for skilled labor at lower levels in the system. (If the objective also includes eventual self-reliance on technology, then investments must also be made in research and development, but this is not identical with training engineers and scientists.)

4.3 Specific Strategies for Each Type

In this section we proceed as if it were morally justified for a country to pursue the type of development pattern described. That is, we ask, What would make most sense to do with respect to education if a planner wanted the education system to fit with this kind of development strategy? Table 2 provides a summary of the various economic strategies and some of their implications.

either to decline monotonically, or to rise at first and then decline, as income increases. Although regression coefficients have not yet been calculated, it seems likely that the two educational measures (initial level and distribution) are significantly related to measures of income level, economic structure and perhaps also income distribution. This is one indication that economic factors influence educational development. The average level and distribution of educational attainment vary enormously among countries, and much of this variation is closely related to economic measures.

Several departures from "normal" patterns which probably have significance for educational planning are evident in the table. These will not be explored here, except to make two broad observations: (1) countries vary widely in degree of economic dualism, and these differences may be related to educational development;[9] (2) socialist, or centrally planned economies show more equal income distribution at given levels of development than other economies. One could also ask, Do their educational attainments also differ systematically?

We now move from the question of initial conditions to the question of development strategy. In doing so, however, we should take note of an

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[9] A very crude measure of dualism is obtained by dividing column 3 of the table (primary sector employment as a % of the total) into column 2 (primary sector value added as a % of the total). The resulting figure represents primary sector income (output) per worker as a % of the economy-wide average. The lower this figure is, the greater is the income (productivity) gap between the two sectors. For example, Zaire is a case of extreme dualism, with a value of .28/.88=.32, while Canada, with a value of .10/.10=1, can be said to be altogether lacking in dualism. This ratio is distorted where oil producers are concerned, since most of their value added by oil is categorized in the primary sector; an agriculture-non-agriculture division would be better than the primary-non-primary split used in the table; a modern-traditional split, the data for which do not exist, would be better yet.

Table 2

tional Concomitants of Various Types
nomic Development Strategies

Strategies			
III	IV	V	VI
South Korea 1964	Cuba	Brazil 1970	Tanzania 1975
All to basic level	All to basic level	Low	All receive some education
Citizenship, basic social skills	Vocational education, political socialization	Engineering, science	Public administration
Oversupply of high level manpower	In principle not a problem	Undersupply of high level manpower	Dependence on expatriates to fill technical positions
Control over private sector	Command planning	University enrollments expanded to match manpower demand	Limited to replace ment of expatriate

important intermediate consideration, the current flow levels of the educational system. In many low and middle-income countries, current flows are large relative to past stocks. This means that the existing mean level and distribution of educational attainment are changing rapidly. Current flows frequently are measured in terms of throughput rates based on repeater and promotion rates, or more crudely in terms of enrollment ratios (i.e., enrollment as a % of the relevant age cohort). These are expressed at various levels of education and in terms of public expenditure levels (official expenditure on education as a % of the government budget and as a % of GNP). We have not yet studied the relationship of these measures to the measures of economic development, but would expect them to be more loosely related to economic development than are the initial conditions of education measures.

There are many ways in which economic development strategies can be categorized. Some of these are:

1) By type of objective: Perhaps the most important distinction here is between countries which emphasize output growth and those which emphasize greater equality of income (and wealth, opportunity, etc.). Of course these are both pure types. Most governments will claim to be aiming at both objectives, perhaps trying to reconcile them through a "redistribution with growth" rationale. Other objectives, such as a reduction in national "dependency," may also be important. We will return to this distinction later.

2) By sectoral emphasis: This is instrumental rather than ultimate, but it has the advantage of being more operational. When it comes down to allocating scarce resources, is the emphasis on industry, agriculture, or

than half the population need receive any formal education. Educational planning need not exist in this country.

Type II. Given the welfare concern of Type II countries, education must be expanded to reach all citizens. Education is treated as a predefined commodity; however, there are no major problems of socialization as the provision of educational opportunity to all demonstrates the fairness of the system. The government need worry only about problems of delivery (rather than about content). The Educational Planning Office serves primarily to maintain statistics on the extension of education to the populace and does little or no analysis or planning.

Type III. Governments pursuing a Type III strategy in countries that already have a well-developed private sector need not develop a strong central planning agency for education. Most LDCs do not meet that condition, however, and central planning is usually necessary to make up for the lack of a dynamic labor market. Analysis focuses on the manpower requirements of

natural resource development? Closely related to this is the relative degree of emphasis accorded to export expansion (through an "outward-looking" strategy) and import substitution (an "inward-looking" strategy).

3) By degree of effort: Quite aside from the question of the type of development sought, it is a fact that development (of any type) is a higher priority for some governments than for others. The urgency of the development effort surely will have educational efforts.

These and perhaps other, key characteristics of development strategy should be defined as objectively as possible, so as to avoid the danger of categorizing on the basis of the analyst's bias. Quantification should be employed where possible. Measurement must be at a level intermediate between statements of intention and indications of ultimate outcome. The former could be measured through content analyses of the national development plan, speeches by leading politicians, etc., but these expressions cannot be taken literally as precisely defining intent, since they often have other purposes as well. Measures of ultimate outcome (e.g., the growth of GNP) are, among other things, a consequence of the type of strategy pursued and the degree of effort exerted, but they are often as much or more influenced by exogenous factors (e.g., the price of cocoa). The more promising intermediate approach would attempt to measure development strategy through variables such as the sectoral allocation of public investment, which would tell something of the direction of effort, and the level of investment (including expenditures on human resource improvement), which would tell something about the intensity of effort. These measures are not without their limitations, but some experimentation with them, in an attempt to measure development strategy, may prove productive.

formal system, with emphasis on basic socialization, and create nonformal and informal alternatives that provide job-related skills, or it can attempt a reform of the formal system. Design of nonformal and informal alternatives would require knowledge of small business and cooperative formation, production and marketing, community development and labor market practices. Design of a reform requires political skills and knowledge of the organizational structure and process of the Ministry.

Also with the advancement of the economy the government must develop techniques to screen out the increasingly large numbers of students that will be demanding education at higher levels. The planner must not only be able to develop techniques to identify those students who will return more on society's investment in their education, but must also be able to surround the streaming and screening system with an aura of legitimacy. Planners will need to use techniques of rate-of-return and cost benefit analysis to justify greater public investments in educational programs that benefit few people, as

A typology of educational planning situations should emerge from a juxtaposition of types of initial conditions and types of development strategy. The form which this typology might best take is unclear at this time; one possible version is presented below.

3.0 One Way of Categorizing Development Strategies

This typology is meant to offer the planner a simple way of classifying the economic development strategy in the country or region in which he is working. By so doing, the planner can then go on to consider the kinds and relative amounts of education that should be planned, for the products of education to be consistent with the needs of the economy. As we will discuss later this may be a difficult task, perhaps fruitless, and not always the most appropriate ethical choice for the planner, but it is one of his choices.

3.1 Production Vs. Distribution

The typology is created by classifying countries or regions on two dimensions. The first dimension ranges from giving priority to the expansion of total production in the economy, to giving priority to distribution of income and wealth. Although it may be possible to achieve improved distribution through increases in production, one can still affirm that the central objective of some countries is to increase product. Some theorists are now arguing that productivity can best be increased by first redistributing income. Even if this happy thought turned out to be true, we could still classify a country pursuing this strategy along with the group that takes distribution as a fundamental objective. In other words, the country's economy is classified according to whether its immédiate objectives appear to emphasize increased product, or improved distribution. Both human

but these probably will use criteria much different than those usually managed by educational planners. If we knew more about planning for decentralization (rather than planning for increased central control) it might be possible to suggest ways in which planning could contribute to the stimulation of creativity (and hence development) in a country that emphasizes equality. At the moment we do not know how to go about that.

Type V. Manpower analysis is one of the critical tools for planning in a Type V country. High technology import substitution activities require sophisticated manpower, expensive to produce. At the same time the demand is limited. The planner strives to produce the right number of skilled workers and high level manpower, without producing a glut in the labor market. As in Type III, the system must develop means to control the social demand for education that is created by an economy in which education is a principal means for increased income. Failure to do so means an oversupply of skilled labor and problems of brain drain. Planning for lower levels of education is im-

capital theory and classical (i.e., Soviet) Marxian development theories emphasize production over distribution. In general, most economic development theorists could be classified into that group. Persons emphasizing distribution over production include a small handful of national leaders in various countries and the many critics of the consequences of the First Development Decade and current policies of the World Bank, the International Monetary Fund, and country donor agencies such as USAID.

3.2 Source of Revenue

The second dimension distinguishes between income generation through expansion of exports, and income generation through reduction of dependence on imported goods from import substitution or reduced consumption. Clearly a country can follow both of these policies simultaneously but countries can be distinguished in terms of where they place relatively greater emphasis.

Export promotion can take two different forms. A country may emphasize development of extractive industries such as mining, petroleum, forestry, or agriculture, with little or no attention to the extent to which raw materials are processed within the country. Both countries without raw materials, and those with raw materials, may decide to emphasize increased value-added processing within the country. This may be done through intermediate processing of locally extracted raw materials, or it may involve intermediate processing or finishing of inputs from other countries. Some economists see intermediate processing of internally produced raw materials as a natural second stage of development for the resource-rich country. But some countries (Venezuela is the most striking

maintain a core of vital institutions while the country gropes its way toward a new future. Technical assistance is of little value except for the resolution of the most technical of problems, where ideology and culture play no role. Once some agreement has been reached on the rules of distribution, attention begins to shift to questions of production, in order to increase the amount to be distributed. Local creativity is encouraged, and with it comes the need for local analysis and planning to serve that need for new ideas. The planning units are small; planning tends to be short-run and to have information requirements that can be met relatively easily, often through direct contact.

4.4 Factors Leading to Change in Economic and Educational Strategies

We have described the situation faced by the planner as though time stood still, as though the economic development strategy of a country was fixed forever, as though the country were subject to no pressures causing it to change. In fact, even within a relatively short time period (in some cases,

example, perhaps) reached fairly high levels of development (in terms of size of GNP/capita) with little or no value-added processing of raw materials. Some countries, rich in raw materials, may feel that they are too capital poor to afford the cost of establishing processing industries.

Import substitution was for a long period of time the favored development strategy in Latin America; it was once advocated widely by the international development experts. Most of those once in favor of reduction of dependency on foreign goods through construction of capacity to meet national needs with national industries, have now switched to a preference for export promotion as the means to rapid economic growth. Those who still favor import substitution generally are concerned about breaking the relationship of dependency that exists between the poorer nations relative to their richer trading partners. They see the terms of international trade as acting as obstacles to development in the poorer countries, condemning the economically weaker countries to a permanent position of disadvantage in any international economic order. The way to overcome these obstacles is to increase the capacity of the poorer countries to meet their own internal needs, using their own resources. Non-Marxists argue that this internal modernization can be made to occur by developing industries that meet the needs of the modern, industrial sector (the national bourgeoisie) of the country. Neo-Marxists (as opposed to the Soviet-style economists) believe that the solution lies in reducing consumption of imported goods (from capitalist countries), largely by means of government policies that favor production of goods of basic priority (e.g., self-sufficiency in staple foods instead of import substitution of processed foods).

the country; the actions of foreign donors and lenders; the activities of foreign business within the country; and the country's position in the world economy. Even in parliamentary systems,changes in the ruling group are likely to require major recasting of the national educational plan. In non-parliamentary systems, one has no way of timing the length of the plan to match the President's term of office. The country's position in the world economy is another obvious factor the planner must take into account. Especially in the Third World countries, comparative advantages are determined by the actions of others, and not always stable.

Less obvious are the impact of foreign donors and foreign businesses locating within the country. In some countries all capital investment funds for education come from foreign donors; planning obviously is conditioned by what the donors think is important in education. In some countries the manpower requirements for large foreign firms easily outstrip the capacity of local training programs, both formal and nonformal, and often require types of training

The combination of the two dimensions results in the following 2 x 3 matrix, showing six country typologies which are discussed subsequently.

Emphasis on:	Priority given to: Production	Distribution
Export Promotion: Raw materials extraction	Type I	Type II
Export Promotion: Agriculture and intermediate processing	Type III	Type IV
Import Substitution	Type V	Type VI

It bears repeating that this classification scheme is not intended to be exhaustive; we are not interested in describing all economic development strategies so much as in showing that what kind of strategy is being pursued has implications for the planning of education. Therefore, the classification schema above is admittedly simplistic; hopefully it will sharpen issues with respect to education.

Type I countries are eager to increase the rate of economic growth but rely principally on the export of raw materials generally produced through imported (high level) technologies. The sector responsible for the production of the foreign earnings enjoys many privileges and generally lives at a much higher standard of living than the rest of the country. Often it is dominated by foreigners; it constitutes an enclave within the country. Several of the oil countries once followed economic development strategies of this kind. Chile before 1965 depended on earnings from the sale of copper produced by an enclave dominated by foreigners. Liberia today finances the consumption of the upper classes through the taxes on the production of iron

4.5 Change as a Result of Educational Growth

How must plans change as a result of success in meeting educational objectives? Once countries begin to meet national goals of provision of universal primary education planners must consider changes in the offerings of the educational system. Success in meeting targets of increased enrollments in primary, for example, leads to increased pressures for admission to secondary schools. With the expansion of secondary education, there are pressures for admission to universities. Type I and II economies do not necessarily need increased numbers of better-educated workers. Productivity in mineral and oil extraction industries often is principally a function of the technology employed; labor inputs may be vital but are not large. There is little evidence that agricultural productivity continues to rise, using the same technology, once farmers get beyond basic skills of literacy and numeracy. If more sophisticated technologies are introduced, farmers will need more schooling, but unless land is abundant, fewer farmers will be needed to work the land, and

ore by foreign-owned companies. The critical feature of this type of economy, with respect to education, is the reliance on the use of high-level technologies, generally capital intensive, that require a few but highly skilled workers for their operation. These workers generally are supplied by the foreign owners of the technology. In the case where national pride insists on employment of nationals in high level positions, these enclave industries may be managed by nationals trained in foreign schools and universities. (For example, for a long period IBM's representatives in the developing countries, although citizens of the countries in which they worked, were trained in New York.) In some cases there may be reliance on third-country nationals with advanced training in the developed country. The significant feature of Type I countries with respect to education, is that the combination of concern principally for production, with reliance on foreign producers of income, makes large investments in education unnecessary.

Type II countries on the other hand, while enjoying similar endowments of natural resources and hence high rates of growth through export of unprocessed raw materials, translate their concern for distribution of income into the provision of education. Typically education is defined as one of several (health and housing are others) services in the general welfare package. We have no good examples of this type. Venezuela has had high rates of growth through oil and has also spent much of its earnings on social investments, with, it should be noted, little effect on income distribution. Furthermore, although little attention was given in Venezuela to increasing its productive activity, its spending on social programs was more motivated by welfare considerations than a positive redistribution of income. No one lost anything. A comparison of the development of countries pursuing Type I and Type II

instability. Expansion of primary education should therefore be accompanied by the development of mechanisms that enable government to control the expansion of secondary schools. These mechanisms include controls over private school expansion, the imposition of fees, final examinations for primary schools, entrance examinations for secondary schools, and youth movements which either provide attractive alternatives to schooling or are obligatory.

Once a country has decided to industrialize, even at the stage of intermediate technology, the range of educational offerings required by the economy is much larger. The planner's main concern is to maintain some measure of equilibrium between the supply of educated labor and the demand of the "labor market" or the occupational structure of the economy. Economists are divided as to whether educated unemployment is in fact a serious "problem" (even in India). On the one hand, there is evidence that at the higher levels, unemployment of secondary and university graduates is a temporary phenomenon, one of "queueing" for jobs rather than actually not finding work. So long as middle and upper-income

strategies over time would allow for additional insights into the contribution of education to economic growth. If Type I countries re-invest some of their earnings from exportation of raw materials into increased capacity for exploitation, then a comparison of Type I with Type II countries would be a comparison of the returns to investment in physical capital as compared with investments in human capital. If education makes a direct contribution to economic growth, then Type II countries that provide education (even as part of a welfare policy) should eventually experience high rates of development over and above that provided by the exploitation of their natural resources.

Type III countries, often because they are resource poor, use labor in place of capital to generate foreign earnings, through agricultural exports or intermediate processing. The major distinction between agriculture, and minerals and oil, as the basis for exports is that the former in most cases requires high labor inputs with low skill levels, while the latter generally requires smaller inputs of labor at high skill levels. If the exports are based on the production of small farmers, or if the country uses low or intermediate technologies for intermediate processing (e.g., textiles, shoes, plywood) then incomes can be favorably distributed (i.e. tend toward equality). Examples of countries with an export-oriented economy based on labor-intensive technologies are Korea, Taiwan, Hong Kong and Singapore. Although income distributions in some of these countries are good, production rather than redistribution has been the government's central objective. Countries in this category typically attempt to move toward a more capital intensive, high technology strategy to permit greater increments in total income. Manpower needs consequently shift from low skilled agricultural and factory labor to higher levels of technical skills and technological development.

with lower levels of education. This human or psychic cost is undesireable. A more important and third argument is that overeducated persons displace those with less education, who then cascade down in the occupational structure, "bumping" others with even less education. Because income disparities are linked to the occupational structure, and because social class is linked to level of educational attainment, the effect of this is to worsen income distributions.

Each of these three arguments could be debated; the available evidence is contradictory. For only a few occupations (e.g., taxi drivers) has it been shown that the relationship between productivity and educational attainment is non-linear, that is, that increased education is not associated with increased production. Besides, it could be argued that, over time, bored workers with education are those most likely to make the technological innovations that lead to even higher levels of productivity.

The second argument is not well-established either. It is true that many

Type IV countries also use labor in place of capital to generate foreign earnings. Cuba, for example, sought to use sugar as a source of foreign exchange. But these countries, in distinction with those of Type II, emphasize social investments over expansion of productive capacity. In some instances this is reflected in greater demand for skills in the services sector, and less demand for technological, industrial skills. As in the Type II countries, education may be widely distributed as a social right of all citizens, but emphasis now is on education linked to employment, especially to vocational training that qualifies people to work in agriculture and industry oriented to export.

Brazil is an example of a Type V country that defines development in terms of economic growth, and that used import substitution as a major device to begin the process of capital accumulation and industrial development. A critical feature of the import substitution strategy pursued in Brazil was the decision to become self-reliant in the production of goods consumed by the small, "modern" sector. These goods included a number of "luxury" items not consumed by the mass of the people. Attention to production of some items meant neglect of others. More VWs were made in Brazil, but production of basic staples declined. Capital was accumulated by the modern sector at the expense of the "backward" or "traditional" sector. Income disparities widened. As Type V countries experience success in pursuing objectives of economic growth, their productive capacities expand past the demands of national markets, and they turn to an export promotion model. This is now the case for Brazil and other countries which previously exemplified the Type V strategy.

China and Tanzania may serve as examples of Type VI countries. In both cases an explicit decision was made to give priority to questions of distribution

Overproduction of educated people, especially in technical skills at the post-secondary levels, also may be associated with out-migration of these graduates, or brain-drain. The loss of talented people to other, more advanced economies, is a problem if those people could actually be employed in the country in which they were educated, or if the country does not recover the costs invested in their education. Some countries, however, have found it worthwhile to provide more education than can be "absorbed" by the economy, with the expectation that high level manpower emigrating to more advanced economies would repatriate a considerable portion of their earnings. If this does happen, then brain drain is not at least an economic loss to the developing country. The second alternative, for countries that cannot provide employment for persons with high levels of education, is to encourage (allow) emigration at an early age, before the country has already invested in the education of that person. Many of the emigrants from Mexico to the United States, for example, come with low levels of education. The cost of their training in

of income and wealth over questions of expansion of total product. Distribution was made possible not by having a greater economic product to share, but by suppressing "luxury" consumption by privileged sectors of the society, and through redistribution of the means of production. The actual achievement of this policy appears to have been greater in China than in Tanzania.

4.0 Implications for the Planning of Education

Persisting in our use of these 6 types of development strategies as "ideal types," that is, not as models of reality nor as representatives of any given country at this moment but as conceptual categories, we can now look at what they imply for the planning of education. We are interested still in how education should be planned to respond to the needs of the economy. The question is, how does that planning vary given differences in priorities with respect to production or distribution, and given differences in the basic orientation of the economy?

In general, countries that emphasize production over distribution should view education as a means of increasing the productivity and overall efficiency of the economy. Educated and trained people can be considered as resources that are to be allocated in the most effective manner possible to the production system. This should mean that education is rationed according to the productive return expected from it. Most countries are constrained to offer some education to all their citizens (even when those persons are considered as unproductive as, for example, are women in certain countries). Under this constraint countries develop an inexpensive variety of education that is offered to all, and more expensive varieties that are offered to those considered to be most likely to return the investment to society. Where emphasis is on production, then, education should be differentiated. This differentiation will vary according to emphasis on exports vs. import substitution; a point to which

kinds of economic strategies. For example, as a country moves from traditional agriculture, to industrial agriculture, intermediate food processing and small non-farm manufacture, education shifts away from classical,humanist lines with emphasis on producing the "educated" man to emphasis on producing the "skilled" man. The importance of this shift should not be overdrawn. Even in highly industrialized societies most people do not participate in manufacturing, and do not need training in technical skills. Most people will never work in a factory, will never use tools or machines (other than typewriters perhaps, or hair dryers), and most will never work in firms with more than 50 to 100 employees in a given office. It is not necessary, in economic terms, for an educational system to turn itself over entirely to training for industrial employment, for example by requiring all students to take manual arts or industrial science courses. Other benefits (e.g., changed attitudes toward manual workers) are not well-documented. Nor do secondary schools preparing students for the university need to push everyone through a track that would be appropriate for

we will return in a moment. Strictly speaking, it makes no difference whether the allocation of human resources is based on the schools' capacity to identify potentially or already talented individuals, or on the ability of schools to induce required attitudes and skills.

4.1 Distribution as Objective

Where distribution is the major objective, education can be used as a major instrument for the redistribution of income, given that in most societies distinctions in income are associated with occupations which are linked with levels of educational attainment. There are at least two ways in which this relationship between education and income can be broken down. First, a country can provide equivalent or identical education to all, making it impossible to distinguish between people on the basis of academic certification. This could be accomplished either by restricting the education that all receive (as was attempted in China under the Red Guard) or attempting to provide "education for all" at the highest levels in the system (as was attempted partially in Chile under Allende).

A second approach would be to attack directly the relationship between education and occupation,and hence income,by wage policies that control incomes associated with occupations. In effect, this would render level of education useless as an incentive for occupational attainment, but it would allow for continued differentiation among students in terms of the level and kind of education achieved. Some countries, such as South Korea, have, by virtue of strong central governments and long-standing traditions in which income is not an important criteria for status, reduced the income-education correlation.

Education also serves another important function in societies in which distribution is a major objective. Societies that do not have a long-standing

were taught apart from formal schools, immediately prior to employment.

But these kinds of general emphases obey another impulse. They represent a shift in the value structure of the country as much as they do a concern for increased productivity. They are associated with changes in the social prestige and social status systems of the country as much as the occupational structure. It is important for a person to know something about science, even if that knowledge is never used in any way other than to impress others with his knowledge. The educational planners need to understand what are the non-technical, non-utilitarian reasons for the emphasis placed by societies on educating people in skills and knowledge they will never employ productively (in a strict economic sense).

The importance of these changes,in the emphasis of national curricula, lies in the value orientations of the new subject matter and the new pedagogy, as much or more than it does in the utilitarian value of the knowledge transmitted. We know that factories can run at the same level of efficiency given

egalitarian base (and that is almost all) must use education as a major vehicle of socialization of new generations into egalitarian values. Those who once had wealth and income must be educated to accept less. Those who have not had it must, except in cases where growth accompanies the distribution strategy, accept that they will never have it as the rich once had. Where the labor force is differentiated, education must put special emphasis on the importance of non-work-related values, such as citizenship.

4.2 Type of Education and Type of Economy

Differentiation of the labor force occurs as economies begin to develop an internal capacity for production beyond that of natural resources extraction. Enclave economies need people trained principally to deal with problems of possession: clerks and accountants and security personnel at low levels; lawyers, philosophers and others at the upper levels. The more developed the economy becomes, the greater will be the requirements for differentiation of the educational product and, consequently, the greater will tend to be income differentials associated with education.

This differentiation is tempered by the degree to which the technologies employed in production are generated indigenously (rather than imported). Countries that opt for import substitution or export promotion through industrialization, but which rely on foreign capital and technology, need not--in initial stages--be concerned with development of educational capacity to produce all the required personnel, as many necessarily must be produced abroad where knowledge of the technologies exists. If the country's choice is to attempt development of indigenous technologies, then of course emphasis should be put on development of high level manpower from the beginning. Countries that choose to develop through the presence of multinational corporations, and that also rapidly expand education in science and engineering, are likely

on the values and hence behavior of the population in which he is working. This is perhaps especially important for planners working in countries concerned about equality, the Type II, IV and VI economies. Curricular packages designed in advanced capitalist countries, none of which make equality their prime concern, are likely to carry a value orientation that is antithetical to the values associated with egalitarian societies. These curricula not only emphasize sharp divisions in roles based on knowledge, but also tend to associate with those roles, differences in behavior, life-style, and social and economic rewards. These curricula portray occupations in a hierarchical fashion--the brain surgeon knows more than the plumber who knows more than the street cleaner--and since education and knowledge are promoted as a capital investment that will benefit the nation, it is seen as appropriate to establish unequal rewards for occupants of the different occupations. Egalitarian societies are more likely to look for curricula in which the value of people is not determined on the basis of their social utility; in some cases

to find themselves exporting expensive highlevel manpower, as witness the experience of a number of countries.[6] In general, countries with high ratios of foreign to domestic capital, or high dependence on foreign technologies, should begin by attempting to satisfy the demand for skilled labor at lower levels in the system. (If the objective also includes eventual self-reliance on technology, then investments must also be made in research and development, but this is not identical with training engineers and scientists.)

4.3 Specific Strategies for Each Type

In this section we proceed as if it were morally justified for a country to pursue the type of development pattern described. That is, we ask, What would make most sense to do with respect to education if a planner wanted the education system to fit with this kind of development strategy? Table 2 provides a summary of the various economic strategies and some of their implications.

Type I. Governments following a Type I strategy need not concern themselves greatly with education. Some investment will be necessary to provide education for the small group of indigenous elite and followers, but expenditures on education as a proportion of GNP should be relatively low compared to countries pursuing other strategies. Educated and trained people required for the productive enclave industries will be produced by the industries themselves or imported. The private sector (with government subsidies) will handle special demands. The absence of large-scale industry prevents the development of class consciousness, so education is less essential as a socialization device. Government will provide more education in urban areas where political pressures are greatest, least in isolated rural areas. In many cases less

[6] See Charles Kidd, et.al., The International Migration of High-Level Manpower, New York: Praeger, 1970.

planners cannot assume that the consequences of this or that type of education will be congruent with the structure of the economy and national objectives. They will need to build evaluation mechanisms that enable them to assess what education is actually achieving. This is of, course, as true for skill and technical training as it is for programs in moral education. It is likely, however, that relationships of the kind described in this paper do exist, that education does have broad effects of one kind or another, of importance to planners concerned not only for meeting economic production goals. If this paper has helped to sensitize planners to the relationship between education and the implications of one or another economic strategy, its purpose will have been served. It should be clearer now that many of the "technical decisions" made by planners can have serious moral implications, just as they can have unanticipated technical consequences that run counter

Table 2

Examples of the Educational Concomitants of Various Types of the Economic Development Strategies

	Strategies					
	I	II	III	IV	V	VI
Illustrative Country	Liberia	Venezuela	South Korea 1964	Cuba	Brazil 1970	Tanzania 1975
What proportion of population educated?	Low	High	All to basic level	All to basic level	Low	All receive some education
Types of education most emphasized	Lawyers "educated men," service occupations	General humanities, business	Citizenship, basic social skills	Vocational education, political socialization	Engineering, science	Public administration
Supply of graduates to supply of jobs	Need to import skilled Technicians	General oversupply	Oversupply of high level manpower	In principle not a problem	Undersupply of high level manpower	Dependence on expatriates to fill technical positions
Role of planning	None	Descriptive statistics	Control over private sector	Command planning	University enrollments expanded to match manpower demand	Limited to replacement of expatriate

DEVELOPMENT DISCUSSION PAPERS

*1. Donald R. Snodgrass: "Growth and Utilization of Malaysian Labor Supply." The Philippine Economic Journal, 15:273-313, 1976.

2. Donald R. Snodgrass: "Trends & Patterns in Malaysian Income Distribution, 1957-70." In: Readings on the Malaysian Economy. Oxford in Asia Readings Series, compiled by David Lim, New York, Oxford University Press, 1975.

*3. Malcolm Gillis & Charles E. McLure, Jr.: "The Incidence of World Taxes on Natural Resources, With Special Reference to Bauxite." The American Economic Review, 65:389-396, May 1975.

4. Raymond Vernon: "Multinational Enterprises in Developing Countries: An Analysis of National Goals and National Policies." June 1975.

*5. Michael Roemer: "Planning by 'Revealed Preference': An Improvement upon the Traditional Method." World Development, 4:774-783, 1976.

6. Leroy P. Jones: "The Measurement of Hirschmanian Linkages: Comment." Quarterly Journal of Economics, 90:323-333, 1976.

than half the population need receive any formal education. Educational planning need not exist in this country.

Type II. Given the welfare concern of Type II countries, education must be expanded to reach all citizens. Education is treated as a predefined commodity; however, there are no major problems of socialization as the provision of educational opportunity to all demonstrates the fairness of the system. The government need worry only about problems of delivery (rather than about content). The Educational Planning Office serves primarily to maintain statistics on the extension of education to the populace and does little or no analysis or planning.

Type III. Governments pursuing a Type III strategy in countries that already have a well-developed private sector need not develop a strong central planning agency for education. Most LDCs do not meet that condition, however, and central planning is usually necessary to make up for the lack of a dynamic labor market. Analysis focuses on the manpower requirements of agriculture and small industry. In the early stages of development these special requirements are few, and the emphasis is on basic functional education for all. Efficiency considerations rank high as education is viewed as a factor of production. The government may seek to reduce public costs by passing the burden of financing (including public) education to the private sector. At the same time, strong central control is necessary to maximize the fit between educational outputs and the economy's needs. Planning is useful to the extent that it contributes to control over dispersed public and private units.

When the economy advances to the point that technology requires specific skill training, the government has two choices. It can maintain the present

10. David C. Korten: "Integrated Approaches to Family Planning Services Delivery." Commissioned by the U.N. July 1975. (Revised December 1975).

11. Edmar L. Bacha: "On Some Contributions to the Brazilian Income Distribution Debate - I." February 1976.

12. Edmar L. Bacha: "Issues and Evidence on Recent Brazilian Economic Growth." World Development, 5:47-67, 1977.

13. Joseph J. Stern: "Growth, Redistribution and Resource Use." In: Basic Needs & National Employment Strategies. Vol. I of Background Papers for the World Employment Conference, Geneva, International Labour Organization, 1976.

*14. Joseph J. Stern: "The Employment Impact of Industrial Projects. A Preliminary Report." April 1976. (superseded by DDP. No. 20).

15. J. W. Thomas, S. J. Burki, D. G. Davies, and R. H. Hook: "Public Works Programs in Developing Countries: A Comparative Analysis." May 1976. Also pub. as World Bank Staff Working Paper No. 224, February 1976.

formal system, with emphasis on basic socialization, and create nonformal and informal alternatives that provide job-related skills, or it can attempt a reform of the formal system. Design of nonformal and informal alternatives would require knowledge of small business and cooperative formation, production and marketing, community development and labor market practices. Design of a reform requires political skills and knowledge of the organizational structure and process of the Ministry.

Also with the advancement of the economy the government must develop techniques to screen out the increasingly large numbers of students that will be demanding education at higher levels. The planner must not only be able to develop techniques to identify those students who will return more on society's investment in their education, but must also be able to surround the streaming and screening system with an aura of legitimacy. Planners will need to use techniques of rate-of-return and cost benefit analysis to justify greater public investments in educational programs that benefit few people, as opposed to programs for the masses. As the private sector develops, the need for central planning should be less. The role of the planning office should change from one of stimulation and control to one of facilitation and service.

Type IV. Under the Type IV strategy the planner needs to design education to emphasize solidarity. This strategy will work best when the costs of achieving solidarity do not outweigh the benefits of having a cohesive population responsive to central directives. Probably educational planning involving the use of high-powered techniques of analysis for the allocation of resources is not required given this kind of strategy. There will need to be central offices and control mechanisms that monitor and direct the process,

20. Joseph J. Stern: "The Employment Impact of Industrial Investment. A Preliminary Report." January 1977. (supersedes DDP. No. 14). Also published as a World Bank Staff Working Paper, No. 255, June 1977.

21. Michael Roemer: "Resource-Based Industrialization in the Developing Countries. A Survey of the Literature." January 1977.

22. Donald P. Warwick: "A Framework for the Analysis of Population Policy." January 1977.

23. Donald R. Snodgrass: "Education & Economic Inequality in South Korea." February 1977.

24. David C. Korten & Frances F. Korten: "Strategy, Leadership, and Context in Family Planning: A Three Country Comparison." April 1977.

25. Malcolm Gillis & Charles E. McLure: "The 1974 Colombian Tax Reform & Income Distribution." Pub. as: "Taxation and Income Distribution: The Colombian Tax Reform of 1974." Journal of Development Economics, 5:233-258, September 1978.

but these probably will use criteria much different than those usually managed by educational planners. If we knew more about planning for decentralization (rather than planning for increased central control) it might be possible to suggest ways in which planning could contribute to the stimulation of creativity (and hence development) in a country that emphasizes equality. At the moment we do not know how to go about that.

Type V. Manpower analysis is one of the critical tools for planning in a Type V country. High technology import substitution activities require sophisticated manpower, expensive to produce. At the same time the demand is limited. The planner strives to produce the right number of skilled workers and high level manpower, without producing a glut in the labor market. As in Type III, the system must develop means to control the social demand for education that is created by an economy in which education is a principal means for increased income. Failure to do so means an oversupply of skilled labor and problems of brain drain. Planning for lower levels of education is important only as these provide inputs to the upper levels: that is, programs are not considered terminal in themselves. Because the technologies themselves are almost always imported, the skills required for planning are themselves imported. Technical assistance is required in the initial stages of the process until educational planners trained abroad can replicate in the recipient country the technology that is needed.

Type VI. Governments in Type VI countries seek to create a process that results in a pattern of production and consumption appropriate to the culture, ideology and resource constraints (or endowments) of the country. The social energy requirements of the process are great and the variety of possible outcomes so great that planning is of little value, except as necessary to

31. Joseph J. Stern & Jeffrey D. Lewis: "Employment Patterns & Income Growth." June 1977.

32. Jennifer Sharpley: "Intersectoral Capital Flows: Evidence from Kenya." August 1977.

33. Edmar L. Bacha: "Industrialization and the Agricultural Sector." Prepared for United Nations Industrial Development Organisation, November 1977.

* 34. Edmar Bacha and Lance Taylor: "Brazilian Income Distribution in the 1960's: 'Facts', Model Results and the Controversy." Presented at the World Bank-sponsored Workshop on Analysis of Distributional Issues in Development Planning, Bellagio, Italy, 1977. The Journal of Development Studies, 14:271-297, April 1978.

35. Richard H. Goldman and Lyn Squire: "Technical Change, Labor Use and Income Distribution in the Muda Irrigation Project." January 1978.

maintain a core of vital institutions while the country gropes its way toward a new future. Technical assistance is of little value except for the resolution of the most technical of problems, where ideology and culture play no role. Once some agreement has been reached on the rules of distribution, attention begins to shift to questions of production, in order to increase the amount to be distributed. Local creativity is encouraged, and with it comes the need for local analysis and planning to serve that need for new ideas. The planning units are small; planning tends to be short-run and to have information requirements that can be met relatively easily, often through direct contact.

4.4 Factors Leading to Change in Economic and Educational Strategies

We have described the situation faced by the planner as though time stood still, as though the economic development strategy of a country was fixed forever, as though the country were subject to no pressures causing it to change. In fact, even within a relatively short time period (in some cases, within the span of a five-year plan period) changes in the conditions under which countries operate may require a rethinking of planned strategies.

The factors likely to require change include those that could be considered as operating within the educational system, and those that originate external to the educational system. Those within the system perhaps of the greatest importance are educational philosophies, and demographic trends. Both of these, while important, do not tend to change rapidly, so that the planner while he must take them into account in his initial planning, would not need to be concerned about changes occurring within a five-year period.

Among the changes that occur external to the educational system, those of greatest importance might include: changes in the political power balance in

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the country; the actions of foreign donors and lenders; the activities of foreign business within the country; and the country's position in the world economy. Even in parliamentary systems,changes in the ruling group are likely to require major recasting of the national educational plan. In non-parliamentary systems, one has no way of timing the length of the plan to match the President's term of office. The country's position in the world economy is another obvious factor the planner must take into account. Especially in the Third World countries, comparative advantages are determined by the actions of others, and not always stable.

Less obvious are the impact of foreign donors and foreign businesses locating within the country. In some countries all capital investment funds for education come from foreign donors; planning obviously is conditioned by what the donors think is important in education. In some countries the manpower requirements for large foreign firms easily outstrip the capacity of local training programs, both formal and nonformal, and often require types of training not previously given. Decisions to locate a business in a country, or to start up this or that product line, are not subject to control nor prediction by the educational planner. In some countries governments are strong enough to resist the siren song of the international donor agencies whose proposals run counter to national development objectives, and strong enough to demand that foreign business adapt its technology to the national economy and educational systems. In most cases that is not true. The consequence often is a tension or conflict between the demands made on the educational system by the national economic strategy, and that imposed by the foreign intervention. The planner has to try to satisfy both, neither easy nor always felicitous. The point of this discussion is perhaps the obvious, that planning education for economic development is not a simple matter of a one-shot determination of the long-range strategy advocated by the economists.

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4.5 Change as a Result of Educational Growth

How must plans change as a result of success in meeting educational objectives? Once countries begin to meet national goals of provision of universal primary education planners must consider changes in the offerings of the educational system. Success in meeting targets of increased enrollments in primary, for example, leads to increased pressures for admission to secondary schools. With the expansion of secondary education, there are pressures for admission to universities. Type I and II economies do not necessarily need increased numbers of better-educated workers. Productivity in mineral and oil extraction industries often is principally a function of the technology employed; labor inputs may be vital but are not large. There is little evidence that agricultural productivity continues to rise, using the same technology, once farmers get beyond basic skills of literacy and numeracy. If more sophisticated technologies are introduced, farmers will need more schooling, but unless land is abundant, fewer farmers will be needed to work the land, and the expansion of education will contribute to problems of urban migration and unemployment.

Some countries have used basic education more to insure political stability--especially given policies of economic austerity--than to increase agricultural productivity, but increased productivity has been an important side effect. This seems especially the case in South Korea prior to its industrial expansion. Countries concerned about distribution (Type II) might thus see in universal primary education a means to increase commitment to egalitarian principles. Any country that encourages expansion of primary education, but does not have an economy that can provide employment in occupations that traditionally "required" secondary education, runs a serious risk of generating considerable

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instability. Expansion of primary education should therefore be accompanied by the development of mechanisms that enable government to control the expansion of secondary schools. These mechanisms include controls over private school expansion, the imposition of fees, final examinations for primary schools, entrance examinations for secondary schools, and youth movements which either provide attractive alternatives to schooling or are obligatory.

Once a country has decided to industrialize, even at the stage of intermediate technology, the range of educational offerings required by the economy is much larger. The planner's main concern is to maintain some measure of equilibrium between the supply of educated labor and the demand of the "labor market" or the occupational structure of the economy. Economists are divided as to whether educated unemployment is in fact a serious "problem" (even in India). On the one hand, there is evidence that at the higher levels, unemployment of secondary and university graduates is a temporary phenomenon, one of "queueing" for jobs rather than actually not finding work. So long as middle and upper-income families are willing to subsidize that behavior, and so long as those in line do not turn to pursuits that threaten political stability, government planners need not be too concerned.

Others point out, however, that not everyone stands in line, that the consequence of overproduction at upper educational levels is educational inflation, with people taking jobs requiring less skills than they actually have. This is undesireable for at least three reasons. First, it is sometimes considered to be inefficient. That is, one should provide just that amount of education necessary for a worker to achieve optimal productivity. Overeducation wastes human resources. Second, overeducated workers are presumed to get bored more easily with their jobs, to be less satisfied with their employment than those

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with lower levels of education. This human or psychic cost is undesireable. A more important and third argument is that overeducated persons displace those with less education, who then cascade down in the occupational structure, "bumping" others with even less education. Because income disparities are linked to the occupational structure, and because social class is linked to level of educational attainment, the effect of this is to worsen income distributions.

Each of these three arguments could be debated; the available evidence is contradictory. For only a few occupations (e.g., taxi drivers) has it been shown that the relationship between productivity and educational attainment is non-linear, that is, that increased education is not associated with increased production. Besides, it could be argued that, over time, bored workers with education are those most likely to make the technological innovations that lead to even higher levels of productivity.

The second argument is not well-established either. It is true that many workers are dissatisfied with their jobs, it is not clear that this is a result of having more education than can be "utilized" by the job itself. With respect to the third argument, the effect of overeducation and of educational inflation will depend on the shape of the occupation-income relationship. For many occupations there are rather small differences in income between white-collar jobs that traditionally required secondary education (but are now being filled by university graduates) and blue-collar jobs traditionally filled by primary school graduates (but now by secondary school graduates). This will vary from economy to economy. If the differences are small, and if the costs of higher education are borne by families, then the effect on income distributions could be positive.

Overproduction of educated people, especially in technical skills at the post-secondary levels, also may be associated with out-migration of these graduates, or brain-drain. The loss of talented people to other, more advanced economies, is a problem if those people could actually be employed in the country in which they were educated, or if the country does not recover the costs invested in their education. Some countries, however, have found it worthwhile to provide more education than can be "absorbed" by the economy, with the expectation that high level manpower emigrating to more advanced economies would repatriate a considerable portion of their earnings. If this does happen, then brain drain is not at least an economic loss to the developing country. The second alternative, for countries that cannot provide employment for persons with high levels of education, is to encourage (allow) emigration at an early age, before the country has already invested in the education of that person. Many of the emigrants from Mexico to the United States, for example, come with low levels of education. The cost of their training in order to gain employment is borne by the United States rather than by Mexico, and pressure on Mexican schools is relieved. This is not a possibility for many countries, of course.

The division of labor that accompanies industrialization requires changes in the distribution of offerings in the educational system. Educators differ in the extent to which they emphasize the acquisition of scientific attitudes and knowledge in the lower primary grades (as opposed to communication skills and basic political, cultural and moral identifications). By secondary level, however, there is less agreement about the need for schools to begin to develop students along lines that correspond to the broad categories of work in the economy.

We have already discussed the types of education that predominate in various

kinds of economic strategies. For example, as a country moves from traditional agriculture, to industrial agriculture, intermediate food processing and small non-farm manufacture, education shifts away from classical, humanist lines with emphasis on producing the "educated" man to emphasis on producing the "skilled" man. The importance of this shift should not be overdrawn. Even in highly industrialized societies most people do not participate in manufacturing, and do not need training in technical skills. Most people will never work in a factory, will never use tools or machines (other than typewriters perhaps, or hair dryers), and most will never work in firms with more than 50 to 100 employees in a given office. It is not necessary, in economic terms, for an educational system to turn itself over entirely to training for industrial employment, for example by requiring all students to take manual arts or industrial science courses. Other benefits (e.g., changed attitudes toward manual workers) are not well-documented. Nor do secondary schools preparing students for the university need to push everyone through a track that would be appropriate for those entering the physical sciences or engineering at the university level.

But that is done. Newly industrializing countries, in their eagerness to emulate what they see as the success of the Industrialized West, and the USSR, add on vocational/technical schools, or comprehensive schools with industrial arts requirements for all, and compulsory science even in the upper primary grades. In recent years the trends were first toward modern science and modern mathematics (even for women in societies where women seldom if ever take employment in fields using these skills). Now there is an added emphasis, in many countries, on economics, believing that with that emphasis will come a new generation of entrepreneurs.

In strict terms these curricular changes are inefficient. It would be much more efficient, and probably more effective in terms of being able to guarantee trained people for industry when needed, if the required skills

were taught apart from formal schools, immediately prior to employment.

But these kinds of general emphases obey another impulse. They represent a shift in the value structure of the country as much as they do a concern for increased productivity. They are associated with changes in the social prestige and social status systems of the country as much as the occupational structure. It is important for a person to know something about science, even if that knowledge is never used in any way other than to impress others with his knowledge. The educational planners need to understand what are the non-technical, non-utilitarian reasons for the emphasis placed by societies on educating people in skills and knowledge they will never employ productively (in a strict economic sense).

The importance of these changes,in the emphasis of national curricula, lies in the value orientations of the new subject matter and the new pedagogy, as much or more than it does in the utilitarian value of the knowledge transmitted. We know that factories can run at the same level of efficiency given widely different mixes of people organized by occupation and level of education. Technology makes the greatest difference in level of productivity, and most technologies are manageable (once set up) by people educated in different ways (so long as they are trained for the technology). Of course, in some cases specific kinds of education are required. For example, we are not yet willing to let the plumber do brain surgery. But we are willing to let para-medical personnel perform functions previously restricted to medical doctors, and to let brain surgeons do their own plumbing at home. But many societies have considered it important to provide for all educated persons the categories of thought and the values explicit and implicit in "science" or "economics" or "moral education" or some other broad curricular emphasis.

The planner needs to understand the impact of coherent curricular packages

on the values and hence behavior of the population in which he is working. This is perhaps especially important for planners working in countries concerned about equality, the Type II, IV and VI economies. Curricular packages designed in advanced capitalist countries, none of which make equality their prime concern, are likely to carry a value orientation that is antithetical to the values associated with egalitarian societies. These curricula not only emphasize sharp divisions in roles based on knowledge, but also tend to associate with those roles, differences in behavior, life-style, and social and economic rewards. These curricula portray occupations in a hierarchical fashion--the brain surgeon knows more than the plumber who knows more than the street cleaner--and since education and knowledge are promoted as a capital investment that will benefit the nation, it is seen as appropriate to establish unequal rewards for occupants of the different occupations. Egalitarian societies are more likely to look for curricula in which the value of people is not determined on the basis of their social utility; in some cases this will be accomplished by emphasizing the greater importance of other knowledge (e.g., spiritual, ideological) that is accessible to all in roughly equal amounts.

5.0 Summary

As with so much of education, there is not a great deal of evidence to support these assertions. We know that countries do differ in the value content of their curricula, and that those differences are associated with differences in the objectives of their economy and hence educational system. What we don't know for certain is that education can be so organized as to produce desired effects (as opposed to desired inputs). For the time being, then,

planners cannot assume that the consequences of this or that type of education will be congruent with the structure of the economy and national objectives. They will need to build evaluation mechanisms that enable them to assess what education is actually achieving. This is of course as true for skill and technical training as it is for programs in moral education. It is likely, however, that relationships of the kind described in this paper do exist, that education does have broad effects of one kind or another, of importance to planners concerned not only for meeting economic production goals. If this paper has helped to sensitize planners to the relationship between education and the implications of one or another economic strategy, its purpose will have been served. It should be clearer now that many of the "technical decisions" made by planners can have serious moral implications, just as they can have unanticipated technical consequences that run counter to objectives being pursued. The planner must, therefore, examine his actions in the broadest possible conception of the society in which he works.

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